

EXHIBIT 2



Congressional Budget Office

Background Paper

CBO's Budgetary Treatment of Fannie Mae and Freddie Mac

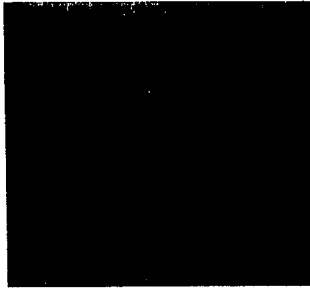
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Preface

After the U.S. government assumed control in 2008 of Fannie Mae and Freddie Mac—two federally chartered institutions that provide credit guarantees for almost half of the outstanding residential mortgages in the United States—the Congressional Budget Office (CBO) concluded that the institutions had effectively become government entities whose operations should be included in the federal budget. As a result, CBO incorporated estimates of the budgetary costs of the two entities in the baseline budget projections it published in 2009. This background paper describes CBO's budgetary treatment of Fannie Mae and Freddie Mac and the methods CBO used to estimate their costs. (CBO will issue new baseline projections for Fannie Mae and Freddie Mac in *The Budget and Economic Outlook* to be published in late January 2010.)

Damien Moore wrote the paper under the supervision of Kim Kowalewski and Robert Dennis. Kim Cawley, Chad Chirico, Peter Fontaine, Jeffrey Kling, Deborah Lucas, Joe Mattey, Larry Ozanne, and Aurora Swanson provided helpful comments on earlier drafts, as did Marvin Phaup of the Pew Economic Policy Group and James L. Blum. (The assistance of outside reviewers implies no responsibility for the final product, which rests solely with CBO.)

Chris Howlett edited the paper, and Kate Kelly proofread it. Maureen Costantino prepared the paper for publication, with assistance from Jeanine Rees. Lenny Skutnik produced the printed copies, Linda Schimmel coordinated the print distribution, and Simone Thomas prepared the electronic versions for CBO's Web site (www.cbo.gov).

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CBO's Budgetary Treatment of Fannie Mae and Freddie Mac

Summary and Introduction

In September 2008, the Director of the Federal Housing Finance Agency placed into conservatorship two large government-sponsored enterprises, the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac).¹ At the same time, the Secretary of the Treasury took a major ownership interest in both entities. In taking those steps, federal officials were exercising authority provided in the Housing and Economic Recovery Act of 2008.² In the judgment of the Congressional Budget Office (CBO), those actions make Fannie Mae and Freddie Mac part of the government and imply that their operations should be reflected in the federal budget.

Fannie Mae and Freddie Mac were chartered by the Congress to provide liquidity and stability to the secondary market for residential mortgages (the market in which those mortgages are bought and sold). In carrying out their charters, the two entities purchase mortgage loans made by lenders and package them into mortgage-backed securities (MBSs), which can be sold to investors along with a guarantee that principal and interest on the underlying mortgages will be paid in full. The two entities also invest directly in mortgages and MBSs, which they hold in their portfolios. To fund those holdings, they issue debt securities that they sell in the international capital markets.³

Despite having a unique legal status and a long history linking them closely to the federal government, Fannie Mae and Freddie Mac have been considered private firms owned by their shareholders. Now, however, the federal government controls both entities and is operating them to fulfill the public purpose of supporting the housing and mortgage markets.⁴ Moreover, both entities rely on federal backing to maintain

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1. Conservatorship is the legal process by which an entity (in this case, the government) establishes control and oversight of a company to put it in a sound and solvent condition.
 2. Public Law 110-289.
 3. A debt security (such as a bill, bond, or note) represents a fixed amount of money that has been borrowed and must be repaid, usually at a specific rate of interest.
 4. For more information about the various ways in which the federal government helps the housing market, see Congressional Budget Office, *An Overview of Federal Support for Housing*, Issue Brief (November 3, 2009).

their low-cost access to financial markets. Although they are not legally government agencies, and their employees are not civil servants, CBO believes it is appropriate and useful to policymakers to include their financial transactions alongside all other federal activities in the budget.⁵

In the baseline budget projections it published in 2009, CBO accounted for the cost of the entities' operations in the federal budget as if they were being conducted by a federal agency. That is, CBO's baseline treated the mortgages owned or guaranteed by Fannie Mae and Freddie Mac as loans and loan guarantees of the federal government. For the entities' new loan and guarantee commitments, CBO projected budget outlays equal to the estimated subsidy inherent in the commitments at the time they are made. For the entities' outstanding loans and guarantees at the start of fiscal year 2009, CBO recorded a subsidy equal to the shortfall between the current value of the mortgages and the liabilities used to fund them at the time the baseline projections were prepared.

Using the budgetary treatment of the transactions of the Troubled Asset Relief Program as a model, CBO calculated the subsidies for Fannie Mae and Freddie Mac by estimating the net cash flows associated with the two entities' mortgage commitments and converting those estimates into present values using discount rates that reflect the expected rate of return the government could earn on investments or securities of comparable risk. That procedure is conceptually equivalent to the methods that private companies use to compute the fair value of certain assets and liabilities under generally accepted accounting principles.⁶ For the two entities' administrative costs, such as employees' salaries, CBO estimated and recorded costs separately on a cash basis, in keeping with the federal budget's treatment of other credit programs.

The operations of Fannie Mae and Freddie Mac added \$291 billion to CBO's August 2009 baseline estimate of the federal deficit for fiscal year 2009 and \$99 billion to the total deficit projected for the 2010–2019 period.⁷ The estimate for 2009 recognized expected losses from transactions originated before the conservatorship, plus an

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5. The Administration's Office of Management and Budget makes the ultimate decision about whether Fannie Mae and Freddie Mac will be included in the federal budget. Although the President's budget documents have not included the activities of Fannie Mae and Freddie Mac in the budget totals, they have provided financial information about the two entities for several years; see, for example, *Budget of the U.S. Government, Fiscal Year 2010: Appendix*, pp. 1339–1340.
 6. The fair value of an asset is the price that would be received from selling the asset in an orderly transaction between market participants at the measurement date; see Financial Accounting Standards Board, *Financial Accounting Standards No. 157: Fair Value Measurements* (September 2006), p. 2.
 7. When this report was written, the most recent baseline projections were the ones issued in August 2009; see Congressional Budget Office, *The Budget and Economic Outlook: An Update* (August 2009), Table 1-1 and Box 1-1. CBO will publish new baseline projections for Fannie Mae and Freddie Mac in *The Budget and Economic Outlook: Fiscal Years 2010 to 2020*, to be released in late January 2010.

additional subsidy for new mortgage commitments in 2009. Because of their federal backing, Fannie Mae and Freddie Mac provide capital and guarantees to the mortgage market at lower prices than private financial institutions can offer, which ultimately transfers risk from the two entities to taxpayers. The subsidy recorded for the entities' mortgage commitments captures the value of that federal backing.

The Administration has taken a different approach to recording the impact of Fannie Mae and Freddie Mac on the federal budget. In conjunction with the conservatorship, the Treasury signed agreements with the two entities intended to ensure that they could continue to support the mortgage market. In exchange for making direct cash infusions into the entities, the Treasury received shares of their preferred stock and warrants to purchase their common stock. The Administration's Office of Management and Budget (OMB) continues to treat Fannie Mae and Freddie Mac as outside the budget, and it records and projects outlays equal to the amount of those cash infusions. As a result, the Administration has not included in its budget figures subsidy costs that would be directly comparable to CBO's \$291 billion estimate of such costs in 2009. Instead, because the Treasury provided a total of \$95.6 billion in cash outlays to the two entities in fiscal year 2009, the government's final report of spending for 2009 included that amount, which is similar to CBO's August 2009 estimate of cash infusions for that year (\$112 billion).⁸ OMB has estimated that cash outlays from the Treasury to the two entities will total another \$65 billion over the 2010–2019 period.⁹

In contrast, because CBO has concluded that Fannie Mae and Freddie Mac should be treated in the federal budget as government entities, it considers transactions between them and the Treasury to be effectively intragovernmental payments, which do not affect net federal outlays. Adding those transactions to the subsidy costs that CBO has estimated for the entities would amount to double-counting.

Neither CBO nor OMB incorporates debt securities or mortgage-backed securities issued by Fannie Mae and Freddie Mac in estimates of federal debt held by the public. In budget documents, debt held by the public is defined narrowly as including only debt issued directly by the Treasury. Excluding the two entities' debt is consistent with the exclusion of other federal obligations, such as those of the Tennessee Valley Authority or commitments made under federal loan guarantee programs. Moreover, CBO's treatment of the entities' debt does not constitute a statement about whether or not that debt should be considered federal debt. Such a determination depends on how narrowly or broadly one interprets the concept of federal debt and for what purpose. Nevertheless, recent events clearly indicate a strengthening of the federal government's commitment to the obligations of Fannie Mae and Freddie Mac.

8. See Department of the Treasury, *Combined Statement of Receipts, Outlays, and Balances of the United States Government* (November 2009).

9. See *Budget of the U.S. Government, Fiscal Year 2010: Analytical Perspectives, Supplemental Materials*, Table 27-1.

Budget projections for the two entities are inherently uncertain. Some key factors—such as how sensitive mortgage default rates are to changes in house prices, or what discount rates apply to certain cash flows—are difficult to estimate precisely. In addition, such projections are likely to vary considerably over time as the prices of various mortgage-related securities fluctuate and as the two entities realize mortgage losses. Updates to CBO's estimates of subsidy costs will reflect any changes in discount rates and expectations about future mortgage losses, as well as possible refinements in the underlying methodology.

Background to Federal Conservatorship for Fannie Mae and Freddie Mac

Fannie Mae and Freddie Mac were federally chartered four decades ago as private companies with a public mission to provide liquidity and stability to the secondary market for residential mortgages. Their activities are largely confined to providing guarantees against credit losses on pools of conforming mortgages (loans that conform to certain underwriting criteria) and maintaining an investment portfolio of mortgages and MBSs funded by selling debt securities to the public.¹⁰ Through those activities, the two entities help maintain an active secondary mortgage market and thereby help improve lenders' access to financing to make new loans. Together, the mortgages guaranteed or owned by Fannie Mae and Freddie Mac total approximately \$5 trillion and account for almost half of all outstanding residential mortgages.

Historically, their federal charters have allowed the two entities to borrow at interest rates lower than those paid by comparable finance companies without such a charter and close to those paid by the Treasury. Investors viewed the charters as an implicit federal guarantee of the entities' debt obligations, despite the government's assertions to the contrary.¹¹ Reinforcing that view, Fannie Mae and Freddie Mac were subject to less onerous capital requirements than other regulated financial institutions.¹² The lower borrowing costs enjoyed by the two entities flowed to participants in the housing market in the form of lower mortgage rates and to the entities' stockholders in the form of higher profits.

10. Credit losses in this case refer to the losses experienced by a holder of a mortgage or MBS when a borrower defaults.

11. For previous discussions of the entities' federal support, see Congressional Budget Office, *Federal Subsidies and the Housing GSEs* (May 2001), and the statement of Douglas Holtz-Eakin, Director, Congressional Budget Office, before the Senate Committee on Banking, Housing, and Urban Affairs, *Regulation of the Housing Government-Sponsored Enterprises* (October 23, 2003).

12. Under the federal conservatorship, capital requirements for Fannie Mae and Freddie Mac have been suspended. The injections of cash from the Treasury in exchange for senior preferred stock ensure that, on the basis of generally accepted accounting principles, the entities have sufficient assets to cover their liabilities.

The activities of Fannie Mae and Freddie Mac carry several risks. In their guarantee business and their investment portfolios, the entities incur losses when property owners default on mortgages.¹³ Their mortgage portfolios also expose the entities to interest rate risk and prepayment risk—that is, the possibility of losses when fluctuating interest rates and prepayments of mortgages create a gap between the value of the entities' asset portfolios and the value of the debt used to fund them.

Following the housing bust that began in 2007, Fannie Mae and Freddie Mac experienced unprecedented losses on mortgages and MBSs. Initial losses came from their holdings of “private-label” securities—MBSs issued by private companies without government backing. The entities' shift toward buying risky private-label securities had begun in 2001, but their holdings swelled significantly after 2004, especially those of Freddie Mac.¹⁴ Some of the mortgage loans underlying those securities were made to low-income households and thus helped the entities meet their affordable-housing goals.

In early 2008, Fannie Mae and Freddie Mac held approximately \$200 billion in private-label securities backed by risky subprime and Alt-A mortgages.¹⁵ Declines in the value of those securities accounted for most of the entities' losses through mid-2008. The private companies that issued subprime and Alt-A securities made those securities acceptable to Fannie Mae and Freddie Mac by creating structures that required other investors to take the first losses on the underlying mortgages.¹⁶ The value of those securities plummeted, however, with the prospect that losses on the underlying mortgages would exceed the protection provided by such structures.

At the beginning of 2008, the two entities also directly held or guaranteed more than \$500 billion worth of mortgages that were comparable in risk to mortgages typically designated as subprime or Alt-A loans. Large losses are expected on those mortgages as well, but because the mortgages are not held in the form of securities, the losses

13. Some of those losses are borne by third parties: for example, when private insurers bear some of the credit losses on individual mortgages or mortgage pools, or when either Fannie Mae or Freddie Mac holds securities issued by the Government National Mortgage Association (Ginnie Mae), a wholly owned government corporation.

14. See Office of Federal Housing Enterprise Oversight, *Report to Congress 2008* (April 15, 2008).

15. Subprime and Alt-A mortgages are extended to borrowers who do not meet the qualifications for a prime mortgage (one extended to the least risky borrowers) because of one or more risk factors, such as a low credit rating, insufficient documentation of income, or the ability to make only a small down payment. Typically, Alt-A mortgages are offered to borrowers who have high credit scores but no proof of income, whereas subprime loans are offered to borrowers who have low credit scores (with or without income verification).

16. For a discussion of those financial instruments and how they contributed to the financial crisis, see Markus K. Brunnermeier, “Deciphering the Liquidity and Credit Crunch, 2007–2008,” *Journal of Economic Perspectives*, vol. 23, no. 1 (Winter 2009), pp. 77–100.

recorded so far have been smaller and recognized later than for the securities.¹⁷ In addition, Fannie Mae and Freddie Mac have experienced unprecedented loss rates on their conforming mortgages because of the severity of the economic downturn.

New Treasury Authority and Resulting Federal Actions

In response to turmoil in the housing and mortgage markets, the Housing and Economic Recovery Act of 2008 gave the Treasury the power to buy an unlimited amount of securities from Fannie Mae and Freddie Mac if the Treasury Secretary determined that “such actions are necessary to (i) provide stability to the financial markets; (ii) prevent disruptions in the availability of mortgage finance; and (iii) protect the taxpayer.”¹⁸ The unlimited authority was designed to reassure investors that the federal government was committed to maintaining the solvency of the two entities.¹⁹

With Fannie Mae and Freddie Mac facing substantial losses that threatened their solvency, the Federal Housing Finance Agency placed them into conservatorship in September 2008, giving control of the entities to the federal government. The Treasury used its authority to write “keep-well” agreements with the entities in which the Treasury would provide up to \$100 billion in capital to each institution.²⁰ Those agreements were recently amended to allow unlimited capital infusions over the next three years. The infusions of capital are made on a quarterly basis in an amount equal to the negative equity (the extent to which the value of liabilities exceeds the value of assets) that each entity reports on its balance sheet. In exchange, the entities give the Treasury senior preferred stock that pays annual dividends of 10 percent. As part of the September 2008 agreements, the Treasury was also granted \$1 billion in preferred stock from both Fannie Mae and Freddie Mac as well as warrants entitling the government to 79.9 percent of each entity’s common shares. As of December 2009, the Treasury had injected a total of \$110.6 billion into the two entities (see Table 1).

CBO’s Budget Projections for Fannie Mae and Freddie Mac

Consistent with the principles expressed by the 1967 President’s Commission on Budget Concepts, CBO has concluded that Fannie Mae and Freddie Mac should now

17. Under generally accepted accounting principles, companies report holdings of securities, but not loans and guarantees, on a fair-value basis. Companies recognize income or loss over time as they change their estimates of the value of securities with fluctuations in market prices. However, financial institutions are not required to report the value of loans and guarantees on a fair-value basis, which typically results in the recognition of only those losses that are imminent.

18. Public Law 110-289, section 1117.

19. That authority also applies to the Federal Home Loan Banks, but to date they have not received any assistance under it.

20. A keep-well agreement is a contract between a guarantor and a beneficiary in which the guarantor agrees to provide necessary financing to the beneficiary for a predetermined period in exchange for compensation, such as an ownership stake in the beneficiary. Such agreements are intended to make the beneficiary appear more creditworthy.

Table 1.

The Treasury's Purchases of Preferred Stock from Fannie Mae and Freddie Mac Under the Conservatorship

(By calendar year, in billions of dollars)

Reporting Period	Fannie Mae	Freddie Mac	Total
2008			
Third quarter	0	13.8	13.8
Fourth quarter	15.2	30.8	46.0
2009			
First quarter	19.0	6.1	25.1
Second quarter	10.7	0	10.7
Third quarter	15.0	0	15.0
Total	59.9	50.7	110.6

Source: Congressional Budget Office.

Note: Fannie Mae and Federal Mac were placed in federal conservatorship on September 6, 2008. The Treasury's purchases of their senior preferred stock are intended to offset the two entities' reported losses by injecting cash to help them maintain sufficient capital. The actual cash injections occur in the quarter after the reporting period used to calculate them.

be included in the federal budget. The commission's landmark report asserted that "The federal budget should, as a general rule, be comprehensive of the full range of federal activities. Borderline entities and transactions should be included in the budget unless there are exceptionally persuasive reasons for exclusion."²¹ The commission identified several key questions to use in determining whether to include programs in the budget: "Who owns the agency? Who supplies its capital? Who selects its managers? Do the Congress and the President have control over the agency's program and budget, or are the agency's policies the responsibility of the Congress or the President only in some broad ultimate sense?" The report recommended that "Government-sponsored enterprises be omitted from the budget when such enterprises are completely privately owned." CBO believes that the federal government's current financial and operational relationship with Fannie Mae and Freddie Mac warrants their inclusion in the budget.

Consequently, in the baseline budget projections that it published in 2009, CBO accounted for the costs of the two entities' operations as if they were being conducted by a federal agency. In that accounting, the mortgages owned or guaranteed by Fannie Mae and Freddie Mac were treated as loans and guarantees of the federal government. CBO estimated budget outlays for the new loan and guarantee commitments projected to be made each year; those outlays were estimates of the lifetime subsidy

21. President's Commission on Budget Concepts, *Report of the President's Commission on Budget Concepts* (October 1967), pp. 25, 30.

Table 2.

Summary of CBO's August 2009 Baseline Budget Projections for Fannie Mae and Freddie Mac

(By fiscal year, in billions of dollars)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Subsidy Costs (Federal outlays) ^a	291 ^b	25	21	16	14	5	5	4	3	3	3	389
Components of the Subsidy Estimate												
Mortgage commitments	b	1,175	1,097	889	890	940	1,083	1,118	1,147	1,172	1,234	n.a.
Subsidy rate (Percent) ^c	4.4 ^b	1.9	1.5	1.2	1.1	0.2	0.2	0.2	0.2	0.2	0.2	n.a.
Memorandum:												
Administrative Costs	5	4	4	4	4	4	4	4	4	4	4	46
Treasury Borrowing to Fund												
Purchases of Preferred Stock ^d	112	25	17	8	1	0	0	0	0	0	0	163

Source: Congressional Budget Office.

Note: n.a. = not applicable.

- Includes subsidies for aid to homeowners provided through the Administration's Making Home Affordable plan.
- Includes all mortgage commitments made before fiscal year 2009 and new commitments made in 2009. The estimated subsidy on the preexisting commitments was \$248 billion on \$5 trillion of outstanding mortgages. The subsidy on new commitments was \$43 billion on \$1.6 trillion of new mortgage commitments in 2009.
- The subsidy rate is equal to federal outlays (excluding outlays for the Making Home Affordable plan) divided by new mortgage commitments.
- The Treasury's actual purchases of senior preferred stock in fiscal year 2009 totaled \$95.6 billion. The Treasury has already committed to \$15 billion in purchases for 2010.

inherent in the loan or guarantee commitments for that year (see Table 2). In addition, CBO projected the entities' administrative costs and the incremental Treasury borrowing that will be needed to fund the Treasury's purchases of preferred stock. In those projections, CBO assumed that federal conservatorship of the two entities would continue throughout the 10-year baseline projection period (at that time, through fiscal year 2019).

In its August 2009 baseline, CBO projected that the operations of Fannie Mae and Freddie Mac would have a total budgetary cost of \$389 billion between 2009 and 2019. (That cost includes subsidies for assistance to homeowners under the Administration's Making Home Affordable plan.)²² The bulk of the outlays (\$291 billion) were estimated to occur in 2009. That figure reflects the recognition of substantial losses on the entire outstanding stock of mortgages held or guaranteed by Fannie Mae and Freddie Mac at that time. It closely corresponds to the entities' own estimates of the deterioration in their fair-value net worth—from a surplus of \$7 billion in June 2008 for the two entities combined to a deficit of \$258 billion in June 2009. CBO's much smaller estimate of outlays for 2010 and beyond (a total of \$99 billion over 10 years) captures the cost of new mortgage commitments in those years, when a more stable mortgage market is expected to help reduce subsidy costs.

Although it anticipates that the mortgage market will eventually normalize, CBO expects the federal government to continue subsidizing that market through Fannie Mae and Freddie Mac throughout the projection period. In other words, although the entities' fees and other income on new commitments may be sufficient to cover average losses on those commitments, they are not high enough to fully cover the cost of the risks associated with the commitments. Before the conservatorship, CBO and others recognized that such subsidies existed, but those subsidies were never included in federal budget estimates.²³

CBO's treatment of the cost of the entities' mortgage loan commitments is similar, though not identical to, the budgetary treatment of federal credit programs required by the Federal Credit Reform Act of 1990. Under that law, the budget records a subsidy cost for the loan commitments made by every federal credit program each year, including programs that make loans directly or guarantee loans made by third parties. The subsidy calculation measures the lifetime cost of the loan or guarantee as of the year of disbursement and counts that cost as a federal outlay in that year. The total budgetary cost is computed by projecting all federal cash flows associated with a cohort of loans or guarantees and discounting those cash flows to the year of

22. For information about that plan, see Congressional Budget Office, *The Budget and Economic Outlook: An Update*, Appendix B, Table B-3.

23. See Congressional Budget Office, *Federal Subsidies and the Housing GSEs*; and S. Wayne Passmore, *The GSE Implicit Subsidy and the Value of Government Ambiguity*, Finance and Economics Discussion Series Working Paper No. 2005-05 (Board of Governors of the Federal Reserve, January 2005), available at www.federalreserve.gov/pubs/feds/2005/index.html.

disbursement by applying discount rates that correspond to the interest rates on Treasury securities of comparable maturity. The direct federal administrative costs of those programs are generally excluded from the subsidy estimates and accounted for separately on a cash basis.

In the case of Fannie Mae's and Freddie Mac's mortgage commitments, CBO departs from that credit reform accounting by replacing the Treasury discount rates with discount rates that measure the cost of the risk inherent in those entities' credit obligations. In that approach, the budgetary cost is a "fair-value" estimate that measures what a private entity would need to be paid to voluntarily take on the commitments of Fannie Mae and Freddie Mac without any federal backing. Using such discount rates produces a broader measure of the cost of supporting the entities because it attaches a price to the cost of bearing the risk from the entities' losses. A similar approach is required by law to be used in estimating subsidies for the Troubled Assets Relief Program (it was also required by law to be used in estimating the cost of increasing the U.S. quota in the International Monetary Fund).²⁴

CBO's estimate of subsidy costs for 2009 included a one-time charge for the shortfall between the value of the entities' assets and liabilities at the start of the conservatorship.²⁵ That one-time charge, \$248 billion, accounted for more than 80 percent of the 2009 subsidy estimate; the rest, \$43 billion, was the subsidy cost for new business conducted in 2009. CBO used slightly different methods to estimate the entities' existing and new commitments.

Estimating Subsidy Costs for Existing Business

The subsidy cost for the entities' existing business at the beginning of the conservatorship is the difference between the values of their assets and their obligations (debt and other private claims on the entities' assets, including the value of any shareholder equity).²⁶ CBO used different methods to estimate that cost for different types of obligations. For the entities' preexisting credit obligations—mortgages they held directly or guaranteed—CBO estimated subsidy costs using an adjusted credit reform treatment, as described below. For the entities' other preexisting obligations—including holdings of private-label securities, financial-derivatives obligations, holdings of their

24. See section 123 of the Emergency Economic Stabilization Act of 2008 (part of Public Law 110-343) and title IV of the Supplemental Appropriations Act of 2009 (P.L. 111-32). In addition, CBO estimated the costs of a bill dealing with student loans on a fair-value basis; see Congressional Budget Office, *letter to the Honorable Judd Gregg on the subsidy costs of direct and guaranteed student loans* (July 27, 2009).

25. For reasons explained later in the paper, CBO did not attempt to make separate estimates of subsidies for future transactions involving those assets and liabilities.

26. Since the conservatorship, the claims of private shareholders have been reduced to negligible value, which simply leaves the difference between the value of assets and liabilities (net worth) as a claim held by taxpayers.

own and other federally backed MBSs, and the debt used to fund those obligations—CBO relied on the entities' own fair-value disclosures to estimate subsidy costs.²⁷

CBO did not rely on fair-value disclosures to estimate the cost of assuming the entities' existing mortgage credit obligations because, in CBO's view, those disclosures systematically understate subsidy costs. The difference arises primarily because the entities assume that the prices they charge for assuming credit and other risk when they purchase mortgages represent fair values, whereas CBO believes that because of the entities' perceived government backing (whether implicit before the conservatorship or more explicit now), they purchase mortgages at above-market prices and thereby subsidize the mortgage market. That difference is most apparent for credit guarantees, where the fees charged by Fannie Mae and Freddie Mac are below those offered by private financial institutions. The resources to provide such subsidies arise from the entities' federal backing, which lowers their borrowing costs relative to those of private financial institutions exposed to similar investment risks.

CBO's estimate of the subsidy on the entities' existing mortgage credit obligations is based on the difference between the value of conforming MBSs, which includes the value of the credit guarantee, and the value of the pool of conforming mortgages underlying those MBSs, which have no credit guarantee.²⁸ CBO estimated the values of the MBSs and the underlying mortgages in two steps: first projecting their expected cash flows and then discounting the cash flows to present values using discount rates that capture their respective risk exposures.

To project cash flows associated with the MBSs and the underlying loan pools, CBO used standard empirical models of mortgage prepayments and defaults, calibrated to match current and projected market conditions.²⁹ In those models, given an initial set of characteristics about the mortgages, subsequent changes in the rate of prepayment are strongly influenced by prevailing interest rates, and an increase in the likelihood of mortgage default is largely driven by declining house prices. Combining CBO's projections of interest rates and house prices with estimates from the empirical literature of how sensitive prepayment and default rates are to changes in house prices and

27. A financial derivative is a financial instrument, such as an option or futures contract, whose value depends in part on the value and characteristics of an underlying asset, such as a stock, bond, or commodity.

28. CBO's methodology treats the exposures to credit losses on whole loans and loan guarantees equivalently.

29. See, for example, Yongheng Deng, John M. Quigley, and Robert van Order, "Mortgage Terminations, Heterogeneity, and the Exercise of Mortgage Options," *Econometrica*, vol. 68, no. 2 (2000); Michelle A. Danis and Anthony N. Pennington-Cross, *The Delinquency of Subprime Mortgages*, Working Paper No. 2005-022A (Federal Reserve Bank of St. Louis, March 2005), available at <http://ssrn.com/abstract=761804>; and Shane M. Sherlund, *The Past, Present, and Future of Subprime Mortgages*, Finance and Economics Discussion Series Working Paper No. 2008-63 (Board of Governors of the Federal Reserve, December 2008), available at www.federalreserve.gov/pubs/feds/2008/index.html.

interest rates allowed CBO to forecast mortgage cash flows for representative groups of the two entities' MBSs and mortgage pools. (For more details about that method, see the Appendix.) The projected cash flows of the MBSs mimic those of the underlying mortgage pools, with two exceptions: MBS holders do not suffer the losses experienced by the holders of a mortgage pool when borrowers default, and the cash flow of the mortgage pool includes the guarantee fees charged by the entities, which are not paid to MBS holders.

To discount the cash flows associated with the MBSs and mortgage pools, CBO applied different discount rates to account for the differing risks of those cash flows. Investing in either a loan pool or an MBS is riskier than investing in Treasury securities; hence, investors would require a risk premium—that is, a higher rate of return on the riskier investments than they could earn on Treasury securities. The mortgage pools in turn are riskier than the MBSs because the holders of a mortgage pool risk credit losses. The holders of MBSs are protected through the entities' guarantees from both the expected value of credit losses and the variability of potential losses. Thus, besides being compensated for expected credit losses, holders of a mortgage pool should demand a higher rate of return than that earned on the MBSs. The estimates of the required rates of return on the MBSs and mortgage pools are used to discount the corresponding cash flows. (A more detailed discussion of CBO's estimate of discount rates can be found in the Appendix.)

Estimating Subsidy Costs for New Business

CBO projected the subsidy costs for Fannie Mae's and Freddie Mac's new mortgage purchases and guarantee commitments using a methodology similar to that used for the entities' existing business. The amount of new business projected for each year was based on CBO's forecast of total mortgage originations (which depended on its forecasts of interest rates and housing market conditions) and on the share of total originations expected to be held or guaranteed by the two entities. CBO then converted those cash flow projections into subsidies by discounting the relevant cash flows (including the guarantee fee income that the entities received and the guarantee claim payments that they made). The discount rates were estimated in the same way as for existing business, except that they were based on CBO's projections of interest rates and risk premiums at the time of the disbursements rather than on the 2009 values used for existing business. CBO assumed that in 2010, risk premiums would start to decline toward their historical averages.

For the two entities' guarantee business, CBO estimated that income from guarantee fees would remain a stable proportion of the dollar amount of the entities' outstanding guaranteed mortgages. CBO also projected that the entities would guarantee an increasing share of the mortgage market until the end of 2010 (about 60 percent), after which their share would gradually decline to the historical level (approximately 40 percent). In CBO's August 2009 economic forecast, the housing market begins to recover after 2010, at which time interest rates on nonconforming mortgages are expected to decline and the percentage of mortgages that are nonconforming is

expected to increase (though not completely to the precrisis percentage). CBO expects that in coming years, Fannie Mae and Freddie Mac will acquire or guarantee very few, if any, mortgages as risky as the subprime and Alt-A loans and securities in their current portfolios because of tighter underwriting standards.

Federal conservatorship has caused a shift in the recipients of the subsidy provided by the entities' federal backing. On one hand, the conservatorship has resulted in an increase in the subsidy provided to the mortgage market. The entities' guarantee fees as a percentage of outstanding mortgages have changed little from the levels seen before the crisis in the mortgage market, despite the higher risk of losses, and the entities are expected to continue to guarantee a large share of that market.

On the other hand, by giving the federal government a complete claim to the equity of Fannie Mae and Freddie Mac, the conservatorship has eliminated a source of profit to shareholders that had been associated with the entities' portfolio-funding strategy. The values of the entities' portfolio holdings of mortgages and MBSs have different sensitivities to interest rates than the debt and other liabilities used to fund them, which exposes the entities to potential losses. In exchange for bearing that risk, the entities earn additional income (a risk premium). Historically, shareholders received a disproportionate share of that risk premium because taxpayers were not compensated for their exposure to portfolio-related risks that stemmed from the entities' federal backing. That subsidy from taxpayers to shareholders has been significantly reduced because the government now has first claim to almost any amount of earnings on the entities' portfolios, which partially compensates for the risk of future losses.

CBO's estimates of the costs of new commitments do not include some sources of subsidy that are unrelated to the two entities' guarantee business. For instance, on mortgages held in their portfolios, a subsidy cost could arise if the entities overpaid for mortgages relative to the prepayment risk they assumed, or if they overpaid for derivatives used to hedge against interest rate risk and prepayment risk.

Comparison with Cash Budgetary Treatment

The Office of Management and Budget considers Fannie Mae and Freddie Mac to be nongovernmental entities for federal budgeting purposes. Consequently, OMB records the Treasury's cash infusions to the two entities as outlays in the budget. In fiscal year 2009, the budget recorded \$95.6 billion in such outlays. OMB projects additional cash infusions totaling \$65 billion between 2010 and 2019. If CBO adopted a similar cash treatment, its estimate of outlays for payments to the two entities would total about \$51 billion over the 2010–2019 period (the sum of the estimated cash infusions for that period shown at the bottom of Table 2). The difference between those \$65 billion and \$51 billion cash estimates stems from differing assumptions and modeling choices.

CBO projected the cash infusions using estimates of the shortfall between the forecast value of the entities' assets and liabilities calculated according to generally accepted

accounting principles (GAAP). In CBO's projections, most of the infusions are expected to occur over the next few years, which reflects CBO's forecasts for the overall economy, financial markets, and mortgage markets. As the housing and mortgage markets recover, Fannie Mae and Freddie Mac are expected to generate revenues greater than their losses and other costs. However, in CBO's estimation, the two entities' current dividend commitments to the Treasury exceed their future earnings capacity, making losses on the Treasury's current and future holdings of their senior preferred stock likely.

The total amount that CBO projected for the Treasury's cash infusions from 2009 to 2019—\$163 billion—falls well short of the \$389 billion in subsidy outlays projected in CBO's baseline for that period. As an approximation, one can think of the infusion estimates as capturing only the expected cash shortfalls between the entities' fees and losses. The subsidy estimates, in comparison, incorporate both the expected cash shortfalls and the risk premium that a private investor would demand for bearing the risk that those shortfalls could be much larger than expected.

CBO projected that the entities' portfolio holdings would have a significant positive impact on their GAAP balance sheets (which would reduce the required cash infusions from the Treasury). The mismatch between the rates paid on those portfolio holdings and the debt used to fund them is expected to generate positive net income, which is attributable to the entities' federal backing.

Two key assumptions underlie the portfolio projections: that guarantee fees will hold steady at current rates, and that the combined portfolio holdings of Fannie Mae and Freddie Mac will remain at about \$1.5 trillion until the end of fiscal year 2010 and then gradually decline, as the entities' agreements with the Treasury require. New purchases are assumed to be confined to conforming mortgages and to MBSs issued by the two entities or by Ginnie Mae, rather than subprime or Alt-A securities. CBO assumed that subprime and Alt-A mortgages that terminate early would default, be refinanced privately, or be refinanced through the Federal Housing Administration.

Appendix:

Projecting Mortgage Cash Flows and Valuing Mortgage Guarantees

The model that the Congressional Budget Office (CBO) uses to estimate the value of Fannie Mae's and Freddie Mac's exposure to losses on their mortgage credit business proceeds in several steps. First, CBO estimates the cash flows associated with the two entities' mortgage pools and mortgage-backed securities (MBSs). Those cash flows depend on changes in interest rates and house prices. Second, to establish the subsidy for each cohort of mortgages, CBO computes the net present value of those cash flows using discount rates that reflect the risk inherent in the flows. The subsidy for the pool of mortgage guarantees is the present value of the net losses to the entities, which is equal to the difference between the present values of the MBSs held by investors and of the mortgage pools held in trust by the entities. To the extent possible, CBO tries to calibrate its estimates of certain variables (such as mortgage loss rates and the value of assets and liabilities related to a guarantee) to estimates reported by the entities themselves.

The estimated subsidy costs in CBO's August 2009 baseline projections were computed using a simplified version of the model presented in this appendix. In the full model, cash flows are simulated with a series of equations that include fluctuating interest rates and house prices—variables that have been shown to be key drivers of mortgage cash flows. Accounting for the effect of those variables can be crucial in estimating the costs of certain policy proposals. In describing CBO's modeling methods, this appendix alerts readers to the aspects of the model that were simplified for the baseline estimates.

Simulating Cash Flows in the Mortgage Portfolio

For Fannie Mae's and Freddie Mac's existing business at the time the baseline is prepared, CBO's model divides the entities' mortgage book into representative pools of mortgages by year of origination and loan type and projects baseline default and prepayment rates for each pool using simulations.¹ For the purposes of CBO's baseline calculations, the projected default rate for each pool takes into account the hump-shaped pattern of default typically experienced over the life of a mortgage cohort, the

1. The mortgage book consists of all mortgages directly held or guaranteed by the entities for which the entities bear the costs when borrowers default. The book does not include mortgages held indirectly through privately issued securities. For those securities, CBO relied on the entities' reported fair-value estimates.

experience with losses to date, a forecast of aggregate changes in house prices, and estimates of how sensitive default rates are to changes in those prices. The projected prepayment rate varies over time with CBO's forecast of interest rates. For new mortgages, CBO uses the same procedure but replaces actual levels of macroeconomic variables and mortgage characteristics with forecasts to determine the initial conditions and evolution of the simulation.

A mortgage pool is described by the type of loan (prime, Alt-A or exotic, or subprime), its vintage, the current loan-to-value ratio, and the amount of third-party mortgage insurance. Those features determine the expected path of cash flows over the remaining life of the loans, and simulations result in a distribution of paths around the expected one. Given a dollar amount of loan principal outstanding at the valuation date, L_0 , and a remaining loan term of n periods, the remaining outstanding principal evolves according to the following formula:

$$L_t = (1 + r_{t-1})(1 - d_t - p_t)L_{t-1} - R_t, \quad t = 1, \dots, n \quad (1)$$

where t is the time elapsed since the valuation date, r_t is the mortgage interest rate (which may vary over time), d_t is the fraction of loans between $t - 1$ and t that enter default, p_t is the fraction of loans that are prepaid between $t - 1$ and t , and R_t is the scheduled repayment at the start of period t . Repayments follow a standard amortization schedule based on a representative maturity:

$$R_t = \frac{r_{t-1}(1 - d_t - p_t)L_{t-1}}{1 - (1 + r_{t-1})^{t-n}} \quad (2)$$

In principle, r_t , d_t , and p_t could be randomly determined quantities that fluctuate from period to period. However, to simplify the calculations for the purposes of the baseline, CBO used deterministic interest rates and set deterministic time paths for prepayment (although both were adjusted for CBO's forecast of interest rates, which allows for the possibility that prepayment rates will vary by time and mortgage cohort).

Default Rates

For this analysis, default is defined as an event that causes Fannie Mae or Freddie Mac to suffer a loss on a mortgage it holds directly or to pay a claim on a mortgage it guarantees. In the full version of CBO's model, conditional default rates in year t are specified as

$$d_t = 1 - (1 - d_{bt})^{\exp(\delta_0 + \delta_{SHORT}\Delta r_{St} + \delta_{LONG}\Delta r_{Lt} + \delta_{LTV}\Delta LTV_t)} \quad (3)$$

The baseline default rate (d_{bt}) exhibits a hump-shaped pattern with the peak at about five years, which is derived from historical patterns of mortgage defaults. That baseline rate is adjusted for the characteristics of the mortgage pool and information conveyed by default experience to date (δ_0), as well as for deviations of interest rates

(short-term rate Δr_{st} and long-term rate Δr_{lt}) and of loan-to-value ratios (ΔLTV_t) from their trend paths. Empirically, the sensitivity to changes in loan-to-value ratios is by far the most important of the time-varying factors that determine default rates. Consequently, only that factor has been included in CBO's baseline projections. Changes in interest rates and unemployment have been shown to play some role in default rates, but neither is included in the baseline calculations.²

The current loan-to-value ratio, which affects the borrower's prepayment and default rates, is defined as

$$LTV_t = \frac{L_t}{h_t} \quad (4)$$

To simulate the path of house prices (h_t), CBO drew annual random shocks from a simple random-walk model of house prices, with the central drift tied to CBO's forecast of house prices and assumptions about aggregate and idiosyncratic volatility. That is,

$$h_{t+1} = h_t(1 + a_{t+1} + E_{t+1} + e_{t+1}) \quad (5)$$

where h_{t+1} is next year's house price, h_t is the current year's house price, a_{t+1} is the forecast for growth in house prices between t and $t + 1$, E_{t+1} is the aggregate shock to the house price index, and e_{t+1} is the idiosyncratic shock to individual house prices that captures the price volatility for a representative home in the loan pool. The two shocks are independent random draws from normal distributions that have means of zero and fixed standard deviations.

Losses on Defaulted Loans

When a default occurs, the loss to Fannie Mae or Freddie Mac equals the shortfall between the unpaid balance of the mortgage and the value of the house, after taking into account recovery costs and receipts from third-party insurance. Historically, the entities have reported loss rates in the range of 30 percent to 50 percent of the outstanding loan balance. Loss rates are likely to be higher, however, when the housing market is in decline. To capture the impact of a decline in house prices, CBO assumed that the amount the entities' would recover on a defaulted mortgage would be a fixed fraction of the appraised value of the house plus receipts from insurance.³

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2. Although unemployment does not enter CBO's simulation model directly, its effects are implicit in the baseline adjustment (δ_0), interest rates, and house prices (because interest rates and house prices are generally low when unemployment is high). In principle, other time-varying factors could be included in the specification of default and prepayment rates given sufficient data or other evidence from which to reliably estimate sensitivity parameters.
 3. CBO used a representative interest rate from loans over the historical period, and it did not try to model any effect that changing interest rates might have on credit losses.

The entities partially protect themselves from losses by requiring borrowers who do not make a 20 percent down payment to take out mortgage insurance with third-party insurers. For example, a borrower with a 10 percent down payment might be required to hold mortgage insurance for 15 percent of the property amount, reducing the entities' exposure to losses to 75 percent of the amount borrowed.

Each period, the net loss to the entities is thus

$$d_t\{L_{t-1}(1+r_t) - [L_{t-1}(1+r_t)i_t + \alpha_t h_t]\} \quad (6)$$

That is, of the fraction of loans that default each period, the entities pay the outstanding amount to the MBS holder $[L_{t-1}(1+r_t)]$, recoup an insured amount from the third-party insurer $[L_{t-1}(1+r_t)i_t]$, where i_t is the fraction insured, and recover a stream of payments whose present value is a fraction of the value of the house ($\alpha_t h_t$, where α_t is the fraction recovered).

Prepayment Rates

In the full model, simulated prepayment rates for each segment of the entities' books obey the following equation:

$$p_t = 1 - (1 - p_{bt})^{\exp(\beta_0 + \beta_{SHORT}\Delta r_{st} + \beta_{LONG}\Delta r_{lt} + \beta_{LTV}\Delta LTV_t)} \quad (7)$$

That is, the rate of prepayment fluctuates around a baseline rate, p_{bp} with an adjustment for the characteristics of the loan pool and its experience to the valuation date (β_0) and deviations driven by changes in short- and long-term interest rates or the current loan-to-value ratio away from their trend levels. The base conditional prepayment rate, p_{bp} , steadily rises with the age of the loan, reaching a plateau after five years, which is consistent with past studies of mortgage performance.

Although not included for CBO's baseline projections, the model can also incorporate the sensitivity of prepayment rates to interest rates and changes in property values. Previous empirical research has found that prepayment rates depend on interest rates.⁴ A borrower has a strong incentive to refinance a loan if the refinance rate is sufficiently lower than the current contract interest rate.⁵ That difference is captured by the pair of interest rates in the specification: the long-term rate (r_{lt}) and the short-term rate (r_{st}), which are described below. Another finding is that prepayment rates decline with an increase in the current loan-to-value ratio (LTV_t). That outcome may

4. See, for example, Eduardo S. Schwartz and Walter N. Torous, "Prepayment and the Valuation of Mortgage-Backed Securities," *Journal of Finance*, vol. 44, no. 2 (June 1989), pp. 375–392; and Yongheng Deng, John M. Quigley, and Robert van Order, "Mortgage Terminations, Heterogeneity, and the Exercise of Mortgage Options," *Econometrica*, vol. 68, no. 2 (March 2000), pp. 275–307.

5. The decision to refinance can be less straightforward when variable-rate and fixed-rate mortgages are being compared.

reflect reduced opportunities to refinance a mortgage when the loan amount is close to or greater than the value of the home.

For its baseline projections, CBO did not use the full specification of the model; instead, it simply selected prepayment rates that reflected current market conditions. Mortgages originated before the housing downturn are expected to be prepaid at a slightly faster rate than seen in the past, whereas mortgages originated after the start of the downturn are expected to be prepaid at slower rates because borrowers are locking in historically low interest rates now. Note that for the purposes of valuing mortgage guarantees, precisely modeling prepayment is of secondary importance because the value of the guarantee is most sensitive to changes in default rates and assumptions about losses.

Simulated Interest Rates and Discounting

For the baseline projections, interest rates (r_p , r_{SP} , or r_{LT}) in each period of the model are tied to CBO's forecasts of short- and long-term interest rates. In the full version of the model, interest rates can fluctuate randomly up or down. The projected or simulated interest rates are used to discount risk-free nominal cash flows of various maturities, such as the cash flows from Treasury securities. For cash flows affected by risk, such as the risk of default or prepayment, a premium is added (as explained at the end of this appendix). The mortgage contract rate is estimated from current and past relationships between mortgage interest rates and rates on Treasury securities.

Valuing the Subsidy

In principle, the value of the federal subsidy for Fannie Mae's and Freddie Mac's MBS guarantees could be calculated as the net present value of the entities' gains or losses on those guarantees in each period. Obtaining the appropriate discount rate for those net gains or losses is difficult, however. There is no single traded asset whose cash flows mimic those of the entities' guarantees. Instead, the value of the subsidy for each guarantee is calculated from the difference between the values of the MBS and the underlying mortgage pool. Rates can be more readily established for each of those assets.

After Fannie Mae and Freddie Mac have packaged and sold MBSs, their remaining financial exposure—and therefore the subsidy provided by the federal government in covering net losses—exists through the MBS guarantees. As guarantor, the two entities ensure that MBS holders receive timely payment of principal and interest on the underlying mortgages. Thus, the value of the subsidy can be computed as the difference between the present value of the payments to MBS holders and the present value of payments from the underlying pool of mortgages. CBO uses the separate estimates of discount rates for MBS payments and for pool payments and applies them to the respective payment streams.

The stream of payments from the mortgage pool (net of various third-party servicing fees) is

$$R_{POOL,1}, R_{POOL,2}, R_{POOL,3}, \dots \quad (8)$$

Suppose the MBS payment stream is

$$R_{MBS,1}, R_{MBS,2}, R_{MBS,3}, \dots \quad (9)$$

When a borrower defaults, the entities remove that mortgage from the pool and pay the MBS holder the outstanding amount. Thus, in each period, the difference between the MBS payments and the payments from the pool (net of various fees and insurance payments) equals the losses incurred by the entities:

$$R_{MBS,t} = R_{POOL,t} + d_t \{ L_{t-1}(1 + r_t) - [L_{t-1}(1 + r_t)i_t + \alpha_t h_t] \} \quad (10)$$

Note that CBO made additional adjustments to those cash flows for guarantee fees, third-party insurance premiums, and other payments.

Estimating Discount Rates

Because the loan-pool payments are risky, it is not appropriate simply to discount them using the risk-free discount rates from the interest rate simulation model. Instead, CBO values the cash flow stream in two pieces: the discounted value of the MBS payment stream minus the discounted value of the payment stream from the mortgage pool. The discount rate used for the MBS payment stream comes from the interest rate simulation, with an additional premium: the add-on required to equate the market price of the MBSs with the simulated net present value (when averaged across interest rate, prepayment, and default scenarios) of the stream of MBS payments. That premium reflects risks, or other MBS pricing anomalies, that could not be captured in the simulation model. Historically, the premium has ranged from a few hundredths of a percentage point at certain times to several percentage points at the height of the recent financial crisis.

The mortgage-pool payment stream has an additional exposure to market risk because of volatility in the size of mortgage losses. MBS investors face minimal credit risks; hence, a lower discount rate applies to the MBS payments. (That discount rate will be lower to the extent that the entities have capital to cushion losses or, failing that, investors have faith in the entities' federal backing.)

CBO used an estimate of the difference (or spread) between interest rates on jumbo and conforming mortgages as a proxy for the extra risk premium that would be required by an investor in the underlying mortgage pool. Fannie Mae and Freddie Mac purchase and securitize conforming mortgages from private lenders, but lenders must rely on private arrangements to fund jumbo mortgages (which exceed the size

limit on conforming mortgages). Thus, a major driver of the difference between interest rates on jumbo and conforming mortgages is the funding advantage of the two entities. However, other differences between jumbo and conforming loans that affect the interest rate spread must be accounted for, such as differing borrower characteristics, underwriting standards, and geographic concentrations.⁶ In adjusting for those differences, CBO relied on the work of staff economists at the Federal Reserve Board whose findings suggest that approximately half of the mortgage rate spread has been attributable to factors other than the entities' funding advantage.⁷

The spread between conforming and jumbo rates averaged about 30 basis points (0.30 percentage points) from 2000 to 2007 (see Figure A-1). Since the onset of the financial crisis, however, the spread has been much greater, peaking at 180 basis points. That increase reflects the market risk of losses faced by holders of non-conforming mortgages. For the baseline projections published in January, March, and August 2009, CBO used the observed spread in January 2009, adjusted downward to account for differences between jumbo and conforming mortgages that are not related to the funding advantage of Fannie Mae and Freddie Mac. By November 2009, the jumbo-conforming spread had fallen from its peak to about 100 basis points.

For the entities' existing mortgages, CBO applied a risk premium of 70 basis points to all outstanding loans, regardless of their characteristics. For new mortgage commitments, CBO used its forecast of the adjusted spread in the year of the commitment. Those projected spreads are generally lower than the current spread, reflecting CBO's expectation that mortgage markets, interest rates, and spreads will gradually return to historical levels.

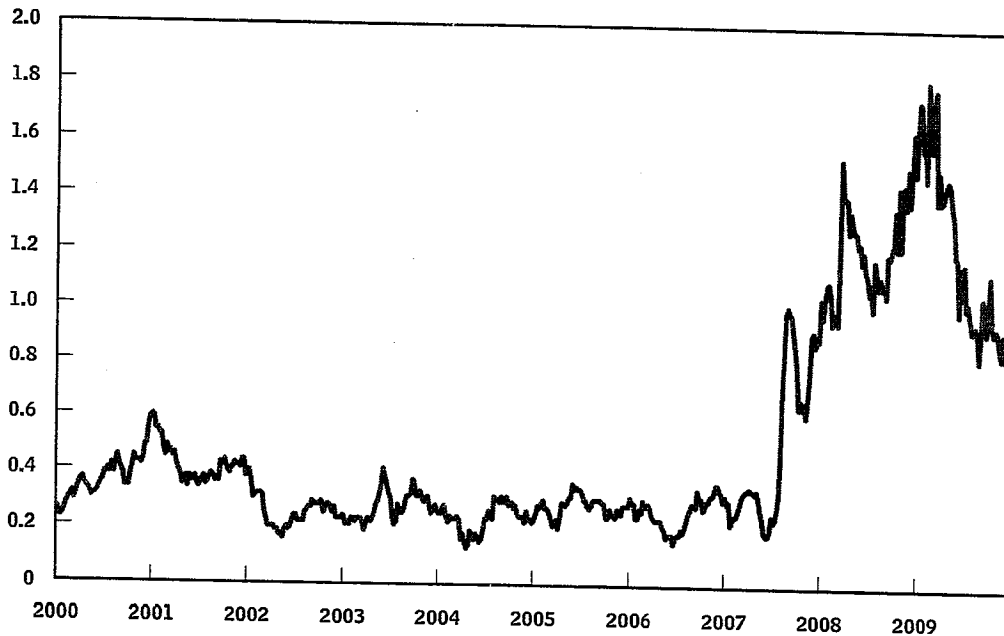
The choice of an appropriate risk premium for each mortgage pool is a critical input in CBO's valuation model. The estimate of the risk premium has varied considerably over time and is currently very high relative to past trends. Moreover, the methods used to disentangle the federal subsidy from other factors that drive the jumbo-

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6. A further complication is that during the conservatorship, Fannie Mae and Freddie Mac may be directed to charge fees that are lower than they would charge otherwise. That would result in a larger jumbo-conforming spread, but the cost would already be accounted for in the entities' cash flows and should not count toward the risk premium. In the other direction, the jumbo-conforming spread may not be a complete measure of the federal subsidy because the jumbo market is indirectly subsidized through the federal benefits that commercial banks receive, such as deposit insurance. See, for example, Anthony B. Sanders, *Measuring the Benefits of Fannie Mae and Freddie Mac to Consumers: Between De Minimis and Small?* Wharton Financial Institutions Working Paper No. 05-36 (Philadelphia: University of Pennsylvania, July 2005), available at <http://fic.wharton.upenn.edu/fic/papers/05/p0536.html>.
 7. See Wayne Passmore, Shane M. Sherlund, and Gillian Burgess, *The Effect of Housing Government-Sponsored Enterprises on Mortgage Rates*, Finance and Economics Discussion Series Working Paper No. 2005-06 (Board of Governors of the Federal Reserve, January 2005); and Shane M. Sherlund, *The Jumbo-Conforming Spread: A Semiparametric Approach*, Finance and Economics Discussion Series Working Paper No. 2008-1 (Board of Governors of the Federal Reserve, January 2008), both available at www.federalreserve.gov/pubs/feds/index.html.

Figure A-1.

Spread Between Interest Rates on Jumbo and Conforming Mortgages

(Percentage points)



Source: Congressional Budget Office based on data from Bloomberg L.P.

Note: Conforming mortgages are loans eligible for sale to Fannie Mae or Freddie Mac because the original mortgage amount does not exceed an annually adjusted dollar limit (in much of the United States, \$417,000 for a single-family home in 2009). Jumbo mortgages are loans that exceed the dollar limit for conforming mortgages.

conforming spread introduce another source of uncertainty. If, instead of 70 basis points, the risk premium was 50 basis points higher (or lower), the subsidy for the entities' existing business would be approximately \$70 billion higher (or lower) than the \$290 billion in CBO's August 2009 baseline. CBO continues to evaluate its projections of the risk premium and the methods used to compute them.